

## CLAIMS

1. A semiconductor device fabricating method comprising:  
an amorphous silicon laminating process for forming an amorphous silicon film  
5 (2) on a substrate (1);  
an irradiation process for irradiating said amorphous silicon film (2) with laser light (16) to transform at least a part of said amorphous silicon film (2) into a polycrystalline silicon film (3); and  
an oxidation process for oxidizing the surface of said polycrystalline silicon film  
10 (3) in an atmosphere including oxygen, after said irradiation process, wherein  
said laser light (16) is a linear beam having an energy-density gradient of 3 (mJ/cm<sup>2</sup>)/μm or more in the widthwise direction, and said linear beam is generated by transforming pulse laser light with a wavelength in a range between 350 nm or more and 800 nm or less, and  
15 said oxidation process is performed in an atmosphere of saturated water vapor under a pressure of 10 atmospheric pressures or more and at a temperature in a range between 500°C or more and 650°C or less.
2. The semiconductor device fabricating method according to claim 1, comprising a process for further laminating silicon oxide, by a chemical vapor deposition method, on the upper surface of said polycrystalline silicon film (3) which has been oxidized in said oxidation process.  
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3. The semiconductor device fabricating method according to claim 1 or 2, wherein  
25 in said irradiation process said amorphous silicon film (2) is irradiated with said laser light (16) such that said widthwise direction is parallel to the direction connecting a source region and a drain region in a thin film transistor to be fabricated.